

**OCCUPATIONAL SAFETY
AND HEALTH STANDARDS BOARD**

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**NOTICE OF PROPOSED MODIFICATION TO****CALIFORNIA CODE OF REGULATIONS**

**TITLE 8: Chapter 4, Subchapter 4,
Article 16, Section 1620; Article 17, Section 1626; and Article 18, Section 1629
of the Construction Safety Orders**

Railing and Stairways

Pursuant to Government Code Section 11346.8(c), the Occupational Safety and Health Standards Board (Standards Board) gives notice of the opportunity to submit written comments on the above-named standards in which modifications are being considered as a result of public comments and/or Board staff consideration.

On June 15, 2006, the Standards Board held a Public Hearing to consider revisions to Title 8, Sections 1620, 1626 and 1629 of the Construction Safety Orders. The Standards Board received written comments on the proposed revisions. The standards have been modified as a result of these comments and Board consideration.

A copy of the full text of the standards, with the modifications clearly indicated, is attached for your information. In addition, a summary of all written comments regarding the original proposal and staff responses is included.

Pursuant to Government Code Section 11346.8(d), notice is also given of the opportunity to submit comments concerning the addition to the rulemaking file of the following document relied upon:

- U.S. Department of Labor, Occupational Safety and Health Administration, Federal Register, Safety Standards for Fall Protection in the Construction – 59:40672-40753, dated August 9, 1994.

A copy of this document is available for review during normal business hours at the Standards Board Office located at the address listed below.

Any written comments on these modifications must be received by 5:00 p.m. on March 5, 2007, at the Occupational Safety and Health Standards Board, 2520 Venture Oaks Way, Suite 350, Sacramento, California 95833. The standards will be scheduled for adoption at a future business meeting of the Standards Board.

The Standards Board's rulemaking files on the proposed action are open to public inspection Monday through Friday, from 8:00 a.m. to 4:30 p.m., at the Standards Board's office at 2520 Venture Oaks Way, Suite 350, Sacramento, California 95833.

Inquiries concerning the proposed changes may be directed to Keith Umemoto, Executive Officer at (916) 274-5721.

OCCUPATIONAL SAFETY AND HEALTH
STANDARDS BOARD

Date: February 13, 2007

Keith Umemoto, Executive Officer

PROPOSED MODIFICATIONS
(Modifications are indicated in bold,
double underline wording for new language,
and bold, strikeout for deleted language.)

STANDARDS PRESENTATION
TO
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PROPOSED STATE STANDARD,
TITLE 8, CHAPTER 4

Subchapter 4, Construction Safety Orders
Article 16. ~~Standard~~ Railings

Amend Section 1620, Design of Temporary Railing, to read:

§1620. Design and Construction of ~~Temporary~~ Railings.

Railings required by these Orders, except as otherwise provided, shall conform to the following standards:

(a) Railings ~~consisting of a top rail and mid-rail~~ shall be constructed of wood, ~~as follows~~, or in an equally substantial manner from other materials, and shall consist of the following:

(1) ~~A~~ a top rail not less than 42 inches or more than 45 inches in height measured from the upper surface of the top rail to the floor, platform, runway or ramp. ~~level and, a midrail.~~

(2) ~~A~~ The mid-rail shall be halfway between the top rail and the floor, platform, runway or ramp when there is no wall or parapet wall at least 21 inches (53 cm) high. "Selected lumber" (see definitions), free from damage that affects its strength, shall be used for railings constructed of wood.

(A) Screens, mesh, intermediate vertical members, solid panels or equivalent members, may be used in lieu of a mid-rail subject to the following:

1. Screens and mesh, when used, shall extend from the top rail to the floor, platform, runway or ramp and along the entire opening between top rail supports.

2. Intermediate vertical members (such as balusters), when used between posts, shall be installed such that there are no openings greater than 19 inches (48 cm) wide.

3. Other intermediate members (such as solid panels, or equivalent members) shall be installed such that there are no openings that are more than 19 inches (.5 m) wide.

(b) Wood railings.

(1) "Selected lumber" (see definitions), free from damage that affects its strength, shall be used for railings constructed of wood.

(2) ~~(b)~~ Wooden posts shall be not less than 2 inches by 4 inches in cross section, spaced at 8-foot or closer intervals.

(3) ~~(c)~~ Wooden top railings shall be smooth and of 2-inch by 4-inch or larger material. Double, 1-inch by 4-inch members may be used for this purpose, provided that one member is fastened in a flat position on top of the posts and the other fastened in an edge-up position to the inside of the posts and the side of the top member. Mid-rails shall be of at least 1-inch by 6-inch material.

(4) ~~(d)~~ The rails shall be placed on that side of the post which will afford the greatest support and protection.

~~(e) Light wood barrier members resting on barrels, boxes, or other makeshift supports shall not be used as a railing substitute.~~

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~~(c)~~ **(f)** All ~~guardrails~~ railings, including their connections and anchorage, shall be capable of withstanding a load of ~~13 pounds per linear foot applied either horizontally or vertically downward at the top rail~~ without failure, a force of at least 200 pounds applied to the top rail within 2 inches of the top edge, in any outward or downward direction, at any point along the top edge.

(1) When the 200 pound test load is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches above the walking/working level.

~~(d)~~ **(d)** Mid-rails, screens, mesh, intermediate vertical members, solid panels, and equivalent ~~structural~~ members shall be capable of withstanding, without failure, a force of at least 150 pounds (666 N) applied in any downward or outward direction at any point along the mid-rail, screen, mesh, or other intermediate member.

~~(e)~~ **(g)** Railings ~~receiving~~ exposed to heavy stresses from employees trucking or handling materials shall be provided additional strength by the use of heavier stock, closer spacing of posts, bracing, or by other means.

(f) The ends of the rails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard.

(g) Railings shall be so surfaced as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

(h) Steel banding and plastic banding shall not be used as top rails or mid-rails.

~~Other types, sizes, and arrangements of railing construction are acceptable, provided they~~ **it** complies with subsections (c), (d), (e) and (f) and meets the following conditions **criteria:**

(1) A smooth-surfaced top rail at a height above floor, platform, runway, or ramp level of not less than 42 inches or more than 45 inches.

(2) Protection between top rail and floor, platform, runway, ramp, or stair treads, equivalent at least to that afforded by a standard mid-rail.

(3) Elimination of overhang of rail ends unless such overhang does not constitute a hazard.

~~(i)~~ **(i)** Handrails that are not a permanent part of the structure being built shall have a minimum clearance of three (3) inches between the handrail and walls or other objects.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Article 17. Ramps, Runways, Stairwells, and Stairs.

Amend Section 1626, Stairwells and Stairs, to read:

§1626. Stairwells and Stairs.

~~(a) Handrailings, when used in connection with stairs, shall be not less than thirty-four (34) inches or more than thirty-eight (38) inches above the tread nosing, constructed in substantial manner, and free from protruding nails and splinters. The uprights shall be not less than two (2) inches by four (4) inches or equivalent in cross section, spaced not more than eight (8) feet apart, and properly anchored. The rail cross section shall be not less than two (2) inches by four (4) inches or equivalent.~~

~~(b) Railings and toeboards shall be installed around stairwells.~~

~~(c) Sufficient illumination on all stairways, providing at least five (5) foot candles of light on the steps, shall be maintained. All lamps providing stairway illumination shall be substantially guarded either mechanically or by location.~~

~~(d) Stairways and landings shall be kept clear of debris, loose material, and equipment not in use.~~

~~(e) Stairways, until permanently enclosed, shall be guarded on all open sides with stair railings. Open sides of stairway landings, porches, balconies, and similar locations shall be guarded with standard railings.~~

~~(f) Temporary Stair and Landing Treads.~~

~~(1) Pan stairs. Before permitting foot traffic, stairways on which treads and/or landings are to be filled in later with concrete or other material shall be temporarily fitted with secured wooden pieces long and wide enough to cover the entire tread and/or landing area and supported to prevent undue deflection. Temporary treads and/or landings shall be replaced when worn below the level of the metal nosing.~~

~~(2) Skeleton Iron Stairs. Before permitting foot traffic, skeleton iron stairs upon which permanent treads and/or landings are to be installed at a later date shall be temporarily fitted with secured wooden pieces long and wide enough to cover the entire tread and/or landing area and of sufficient thickness to prevent undue deflection. Other materials of equivalent strength may be used.~~

~~(g) All parts of stairways, including the treads and landings, shall be free of hazardous projections, such as protruding nails, etc.~~

~~(h) Slippery conditions on stairways shall be eliminated.~~

(a) General.

(1) Stairways shall be at least 24 inches in width and shall be equipped with stair rails, handrails, treads, and landings.

(2) Railings and toeboards meeting the requirements of Article 16 of these safety orders shall be installed around stairwells.

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(b) The following requirements apply to all stairways as indicated:

(1) Temporary stairways that will not be a permanent part of the structure on which construction work is being performed shall be at least 24 inches in width. The stairway shall have landings at each floor, or level, of not less than 30 inches in the direction of travel and extend at least 24 inches in width at every 12 feet or less of vertical rise.

(2) Stairs shall be installed between 30° and 50° from horizontal.

(3) Riser height and tread depth shall be uniform within each flight of stairs, including any foundation structure used as one or more treads of the stairs. Variations in riser height or tread depth shall not be over 1/4-inch (0.6 cm) on any stairway.

(4) Where doors or gates open directly on a stairway, a platform shall be provided, and the swing of the door shall not reduce the effective width of the platform to less than 20 inches (51 cm).

(5) Unprotected sides and edges of stairway landings shall be provided with railings. Design criteria for railings are prescribed in Section 1620 of these safety orders.

(6) Metal pan landings and metal pan treads, when used, shall be secured in place before filling with concrete or other material.

(7) All parts of stairways shall be free of hazardous projections, such as protruding nails.

(8) Slippery conditions on a stairway shall be eliminated before the stairway is used to reach another level.

(c) Stair rails and handrails. The following requirements apply to all stairways as indicated:

(1) Stairways having four or more risers or rising more than 30 inches (76 cm), whichever is less, shall be equipped with:

(A) At least one handrail; and

(B) A stair rail consisting of a top rail and mid-rail along each unprotected side or edge.

(2) Winding and spiral stairways shall be equipped with a handrail offset sufficiently to prevent walking on those portions of the stairways where the tread width is less than 6 inches (15 cm).

(3) The height of stair rails shall be not less than 34 inches nor more than 38 inches from the upper surface of the stair rail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.

(4) Mid-rails shall be located at a height midway between the top edge of the stair rail and the stairway steps.

(A) Screens, mesh, or other material, when used in lieu of mid-rails, shall extend from the top rail to the stairway step, and along the entire opening between top rail supports.

(B) Other structural members, when used, shall be installed such that there are no openings in the stair rail that are more than 18 inches (46 cm) wide.

(5) Handrails and the top rails of stair rails shall be capable of withstanding, without failure, a force of at least 200 pounds (890 n) applied within 2 inches (5 cm) of the top edge, in any downward or outward direction, at any point along the top edge.

(6) The height of handrails shall be not less than 34 inches nor more than 38 inches from the upper surface of the handrail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.

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(7) When the top edge of a stair rail also serves as a handrail, the height of the top edge shall be not less than 34 inches nor more than 38 inches from the upper surface of the stair rail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.

(8) Stair rails and handrails shall be so surfaced as to prevent injury to employees from punctures or lacerations, and to prevent snagging of clothing.

(9) Handrails shall provide an adequate handhold.

(10) The ends of stair rails, handrails and mid-rails shall be constructed so as not to constitute a projection hazard.

(11) Handrails that will not be a permanent part of the structure being built shall have a minimum clearance of 3 inches (8 cm) between the handrail and walls, stair rails, and other objects.

(d) Temporary Service. The following requirements apply to all stairways as indicated:

(1) Except during stairway construction, foot traffic is prohibited on stairways with pan stairs where the treads and/or landings are to be filled in with concrete or other material at a later date, unless the stairs are temporarily fitted with wood or other solid material at least to the top edge of each pan.

(2) Except during stairway construction, foot traffic is prohibited on skeleton metal stairs where permanent treads and/or landings are to be installed at a later date, unless the stairs are fitted with secured temporary treads and landings long enough to cover the entire tread and/or landing area.

(3) Treads for temporary service shall be made of wood or other solid material, shall cover the full width and depth of the stair and shall be supported to prevent undue deflection.

(4) Temporary treads and landings shall be replaced when worn below the level of the top edge of the pan.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Article 18. Access and Egress

Amend Section 1629, Stairways and Ladders, to read:

§1629. Stairways and Ladders.

(a) General.

(1) In all buildings or structures 2 or more stories or 24 feet or more in height or depth, suitable permanent or temporary stairways shall be installed as required in Section 1629(b).

EXCEPTION: At those locations where unusual site conditions prevail, an alternate effective means of access acceptable to the Division may be afforded.

(2) For the purpose of this Section, scaffolds shall not be considered to be structures. ~~Stairways shall be at least 24 inches in width and shall be equipped with handrails, treads and landings.~~

~~Temporary stairs shall have a landing not less than 30 inches wide in the direction of travel at each floor, or level, but never less than 1 landing for every 12 feet of vertical rise.~~

~~EXCEPTIONS:~~

~~1. Stairways 44 inches or less in width may have 1 handrail, except that stairways open on 1 or both sides shall have handrails provided on the open side or sides.~~

~~2. Prefabricated metal scaffold stairway systems.~~

(3) Stairways, ramps or ladders shall be provided at all points where a break in elevation of 18 inches or more occurs in a frequently traveled passageway, entry or exit.

(4) A minimum of 1 stairway shall be provided for access and exit for buildings and structures to 3 stories or 36 feet; if more than 3 stories or 36 feet, 2 or more stairways shall be provided.

~~Where 2 stairways are provided and work is being performed in the stairways, 1 shall be maintained clear for access between levels at all times.~~

(A) When a building or structure has only one stairway between levels, that stairway shall be kept clear to permit free passage of employees.

(B) Where two or more stairways are provided and work is being performed in the stairways, at least one stairway shall be maintained clear for access between levels at all times.

NOTE: For stairway access at demolition projects, refer to Article 31 of these safety orders.

EXCEPTIONS for subsection (a)(4):

1. At those locations where unusual site conditions prevail, an alternate effective means of access acceptable to the Division may be afforded.

~~2. For the purpose of this section, scaffolds shall not be considered to be structures.~~

(5) Stairways shall conform to the criteria shown in Plate B-17, Appendix and Article 17 of these safety orders.

(6) Spiral stairways that are not part of the permanent structure shall not be used.

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(7) Sufficient illumination on all stairways, providing at least five (5) foot-candles of light on the steps, shall be maintained. All lamps providing stairway illumination shall be substantially guarded either physically or by location.

(b) Buildings.

(1) Wood Frame Buildings.

(A) The stairway to a second or higher floor shall be completed before studs are raised to support the next higher floor.

~~(B) Roof and attic work areas of all buildings shall be provided with a safe means of access and egress, such as stairways, ramps or ladders that conform to the provisions of Article 25.~~

~~(C)~~ (B) Cleats shall not be nailed to studs to provide access to and egress from roof or other work areas.

(2) Steel Frame Buildings. Stairways shall extend to the uppermost floor that has been planked or decked. Ladders may be used above that point.

(3) Reinforced Concrete or Composite Steel--Concrete Buildings. Stairways shall extend to the lowermost floor upon which a complete vertical shoring system is in place. A minimum of two ladders at different locations for each floor may be used above this floor but not to exceed three floors.

(4) Roof and attic work areas of all buildings shall be provided with a safe means of access and egress, such as stairways, ramps or ladders that conform to the provisions of Article 25 of these safety orders.

NOTE: Authority and reference cited: Section 142.3, Labor Code.

SUMMARY AND RESPONSE TO COMMENTS

SUMMARY AND RESPONSE TO ORAL AND WRITTEN COMMENTS

I. Written Comments

Christopher Lee, Acting Regional Administrator, Region IX, U.S. Department of Labor, by letter dated June 5, 2006.

Comment No. 1:

CSO 1620(g): The federal equivalent, 1926.502(b)(6), requires all aspects of a guardrail system to be surfaced to prevent punctures, lacerations or snagging. As proposed, Section 1620(g) only requires the top rail to be smooth surfaced and does not address the mid-rail or other materials allowed by 1620(a) and (a)(2).

Response:

The Board accepts this comment and proposes to clarify surfacing of all railing members to prevent punctures, lacerations and snagging by inserting new text into Section 1620(g) which will be verbatim of 29 CFR 1926.502(b)(6).

Comment No. 2:

CSO 1620(g): This section, as proposed, does not contain requirements consistent with 1926.502(b)(2)(iii) and (b)(2)(iv) that no openings greater than 19 inches occur when intermediate members or other structural members are utilized in the guardrail system.

Response:

The Board accepts this comment and proposes to amend Section 1620(a)(2) to limit opening size for all railings, comparable to 1926.502(b)(2)(i) through (iv).

Comment No. 3:

There is no section in the proposed standard equivalent to 1926.502(b)(8) which excludes the use of steel banding and plastic banding for top or mid-rails, and they do not believe that sections 1620(a), (c), (d), (e) and (g) implicitly prohibit the use of banding. They believe that certain configurations of steel and plastic banding could meet the requirement of these sections, resulting in injury to employees from punctures, lacerations or snagging of clothes unless wording consistent with 1926.502(b)(6) is present in the California standard.

Response:

The Board accepts this comment and proposes new Subsection 1620(h) to specifically prohibit the use of steel and plastic banding for top-rails and/or mid-rails.

Comment No. 4:

There is no section existing or proposed that is equivalent to 1926.502(b)(9) which requires top rail and mid-rail materials to be at least ¼ inch nominal diameter or thickness to prevent cuts and lacerations or which requires wire rope flagged with high visibility material at intervals no more than 6 feet. Proposed section 1620(g) which allows the use of other materials for railings does

not preclude the use of wire rope or other materials less than 1/4-inch diameter or thickness. Neither does it require wire rope to be flagged with high visibility material at intervals of 6 feet or less. They note that CSO 1710 covers certain steel erection activities only and is not applicable to all construction as intended by the Federal Standard. Also, section 1710 does not cover other non-wire type materials and ropes and does not require wire ropes utilized in guardrail systems to be flagged with high visibility materials and intervals not to exceed 6 feet.

Response:

The Board notes that existing sections 1620(c) and (d) already address railing cross-section in a performance-oriented manner by prescribing minimum strength requirements. New section 1620(g), added in response to Comment No. 1 also addresses the hazards due to punctures, lacerations (cuts), and snagging.

Flagging at 6-foot intervals, required by Federal standards for 1/4-inch wire rope is unnecessary since compliance with subsections (c), (d) and (g) [added] will preclude the use of small diameter wire rope. Thus, any wire rope that can satisfy those standards will be of sufficient diameter to be readily visible to workers and it will be sufficiently wide to prevent cuts and lacerations which were a concern expressed in FR 59:40672-40753 dated August 9, 1994. Finally, wire rope must be tensioned sufficiently to limit deflection to maintain required minimum railing height, and most structures encountered in construction (other than steel erection) are not satisfactory for anchoring wire rope railing.

The Board is therefore of the opinion that no further modifications are necessary to respond to this comment.

The Board thanks Federal OSHA, Region IX, for their comments and participation in the rulemaking process.

II. Oral Comments

No oral comments were presented at the June 15, 2006, Public Hearing in Sacramento, California.